

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A drive device of an ultrasonic linear motor in which a rail and a base body are driven movably relative to one another by a driving part interposed between the rail and the base body, the driving part comprising:

at least a pair of right and left rollers making contact with side faces of the rail;

at least a pair of right and left ultrasonic vibrators for applying a turning force individually to each of the pair of right and left rollers; and

an urging member that urges the ultrasonic vibrators and the rollers toward the side faces of the rail,

wherein each of the pair of right and left ultrasonic vibrators is comprised of a piezoelectric device and a vibrating elastic member integrally affixed to the piezoelectric device, and each of the pair of right and left rollers is adapted to be turned by vibration of the respective elastic member,

~~wherein the piezoelectric device includes two polarized regions, an AC (alternating current) voltage being applied to only one of the two polarized regions when the rollers rotate to move the base body in a first direction, and~~

wherein the base body is movably supported on an upper face of the rail by bearings disposed on a bottom face of the base body, and the ~~bearings~~ bear a load of the base body, and

wherein each of the pair of right and left ultrasonic vibrators and each of the pair of right and left rollers are supported by a respective holder member disposed on the base body, the holder members being urged by the urging member toward the side faces of the rail.

2. (Previously Presented) The drive device according to claim 1, wherein the ultrasonic vibrators and the rollers and the urging member are received en bloc in a holding frame and are fitted to the base body via the holding frame, and the rollers are removably mounted to the holding frame.

3. (Previously Presented) The drive device according to claim 1, wherein the rail has the upper face for bearing the load of the base body and sloping side faces formed on left and right side faces thereof, the base body has opposing faces facing the sloping side faces, and the rail is gripped by the rollers and the bottom face of the base body, the rollers being mounted on the opposing faces and making contact with the sloping side faces of the rail.

4. (Cancelled)

5. (Currently Amended) An ultrasonic linear motor, comprising:
a rail;
a base body; and
a driving part interposed between the rail and the base body, said driving part movably driving the rail and the base body relative to one another, the driving part comprising:
at least a pair of right and left rollers making contact with side faces of the rail;
at least a pair of right and left ultrasonic vibrators for applying a turning force individually to each of the pair of right and left rollers; and

an urging member that urges the ultrasonic vibrators and the rollers toward the side faces of the rail,

wherein each of the pair of right and left ultrasonic vibrators is comprised of a piezoelectric device and a vibrating elastic member integrally affixed to the piezoelectric device, and each of the pair of right and left rollers is adapted to be turned by vibration of the respective elastic member,

~~wherein the piezoelectric device includes two polarized regions, an AC (alternating current) voltage being applied to only one of the two polarized regions when the rollers rotate to move the base body in a first direction, and~~

wherein the base body is movably supported on an upper surface of the rail by bearings disposed on a bottom face of the base body, and the ~~bearing~~bearings bear a load of the base body, and

wherein each of the pair of right and left ultrasonic vibrators and each of the pair of right and left rollers are supported by a respective holder member disposed on the base body, the holder members being urged by the urging member toward the side faces of the rail.

6. (Previously Presented) The ultrasonic linear motor according to claim 5, wherein the ultrasonic vibrators and the rollers and the urging member are received en bloc in a holding frame and are fitted to the base body via the holding frame, and the rollers are removably mounted to the holding frame.

7. (Previously Presented) The ultrasonic linear motor according to claim 5, wherein the rail has the upper face for bearing the load of the base body and sloping side faces formed on left and right side faces thereof, the base body has opposing faces facing the sloping side faces, and the rail is gripped by the rollers and the bottom face of the base body, the rollers being mounted on the opposing faces and making contact with the sloping side faces of the rail.

8-10. (Cancelled)

11. (Currently Amended) The drive device according to claim 1, wherein ~~when the rollers are rotated by the ultrasonic vibrators to move the base body in the first direction, one of the right roller and the left roller rotates in a clockwise direction, and the other one of the right roller and the left roller rotates in a counterclockwise direction~~the right roller and the left roller rotate in opposite directions.

12. (Currently Amended) The drive device according to claim 1, wherein the ~~bearing bearings~~ are bar-shaped bearings disposed between the bottom face of the base body and the upper face of the rail.

13. (Previously Presented) The drive device according to claim 1, wherein the bearing are ball bearings disposed between the bottom face of the base body and the upper face of the rail at opposite corners of the rail.

14. (Cancelled)

15. (Currently Amended) The ultrasonic linear motor according to claim 5, wherein ~~when the rollers are rotated by the ultrasonic vibrators to move the base body in the first direction, one of the right roller and the left roller rotates in a clockwise direction, and the other one of the right roller and the left roller rotates in a counterclockwise direction~~ the right roller and the left roller rotate in opposite directions.

16. (Currently Amended) The ultrasonic linear motor according to claim 5, wherein the ~~bearing~~ bearings are bar-shaped bearings disposed between the bottom face of the base body and the upper face of the rail.

17. (Previously Presented) The ultrasonic linear motor according to claim 5, wherein the bearing are ball bearings disposed between the bottom face of the base body and the upper face of the rail at opposite corners of the rail.

18. (New) The ultrasonic linear motor according to claim 1, further comprising an AC (alternating current) voltage source, wherein the piezoelectric device includes two polarized regions, and only one of the two polarized regions receives an AC voltage from the AC voltage source at a time.

19. (New) The ultrasonic linear motor according to claim 18, wherein the two polarized regions of the piezoelectric device are in contact with each other.

20. (New) The ultrasonic linear motor according to claim 1, wherein the right roller is located between the right ultrasonic vibrator and one of the side faces of the rail contacting the right roller, and the left roller is located between the left ultrasonic vibrator and another of the side faces of the rail contacting the left roller.

21. (New) The ultrasonic linear motor according to claim 1, wherein a shaft of each of the left roller and the right roller is located between a top and a bottom of the respective holder member.

22. (New) The ultrasonic linear motor according to claim 1, wherein the urging member is in contact with the respective holder member.

23. (New) The ultrasonic linear motor according to claim 22, wherein the urging member is a spring.

24. (New) The ultrasonic linear motor according to claim 5, further comprising an AC (alternating current) voltage source, wherein the piezoelectric device includes two polarized regions, and only one of the two polarized regions receives an AC voltage from the AC voltage source at a time.

25. (New) The ultrasonic linear motor according to claim 24, wherein the two polarized regions of the piezoelectric device are in contact with each other.

26. (New) The ultrasonic linear motor according to claim 5, wherein the right roller is located between the right ultrasonic vibrator and one of side faces of the rail contacting the right roller.

27. (New) The ultrasonic linear motor according to claim 5, wherein a shaft of each of the left roller and the right roller is located between a top and a bottom of the respective holder member.

28. (New) The ultrasonic linear motor according to claim 5, wherein the urging member is in contact with the respective holder member.

29. (New) The ultrasonic linear motor according to claim 28, wherein the urging member is a spring.